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PLEISTOCENE MOLLUSKS FROM WALLACE COUNTY KANSAS,
G. Dallas Hanna

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Pleistocene Mollusks from Wallace County, Kansas.*

BY G. DALLAS HANNA.

Curator of Invertebrate Paleontology, California Academy of Sciences.

ONE of Mr. H. T. Martin's numerous fossil hunting expeditions for the University of Kansas took him to the Miocene mammal beds of Wallace county of that state. Here, in one locality he found some ant hills about which were numerous shells the indefatigable insects had collected. A small quantity of the general debris about the nests was preserved and the mollusks have come to me for study.

The collection, although small, is valuable because it throws more definite light upon the size and duration of the Pleistocene Kansas lake which Prof. J. E. Todd has aptly named "Kaw Lake." Some of the species of mollusks found inhabit lakes solely and since there are none of these bodies of water within a long distance of the locality at the present time, practically conclusive proof is offered of the existence of Kaw Lake before the present epoch. And since many of the species now live in northern cold waters it seems justifiable to conclude that this body of water was coexistent with the great glaciers. Probably its inhabitants lived during the deposition of the Aftonian gravels; that is, prior to the descent of the Kansan ice sheet. It seems likely that the lake was formed by the pre-Kansan ice sheets, continued through the Aftonian period and that its dam was broken by the Kansan sheet.

Kaw Lake probably existed for several hundred years. This is indicated by the presence in it of a large molluscan population which would require a very considerable number of years

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for dispersal. A cool, moist climate similar to that of northern United States or southern Canada must have accompanied it. This is shown by the land-shell species found associated with the fresh water. This was also shown by the shells found in the Phillips county Pleistocene which has been reported upon. (*Hanna and Johnson, Kan. Univ. Sci. Bul., vol. VII, No. 3, 1913.*)

That radical change took place in the climate, fauna and flora of western Kansas after the disappearance of Kaw Lake is evident from the almost complete disappearance of the land and fresh-water mollusks. A considerable number of species and at least two genera are not known from Kansas as yet except from Pleistocene fossils. Neither streams nor uplands are fitted for their existence and search must be made for them far to the north before they are located.

The ants were not particular in choosing material for their "hills." Besides the fossil shells dug from the light buff material forming the lake deposit they collected a few recent species, probably found living near at hand. There were also sand grains of large size and plant stems, seeds and roots.

LIST OF SPECIES.

Sphærium. What appear to be two species were secured. Any attempt at specific determination in this group of shells at this time would merely add to the already almost inextricable confusion.

Valvata tricarinata Say. Four specimens. I know of no published records of this species from Kansas, either living or fossil. Mr. E. C. Johnston collected a dead shell, but not a fossil, at Cameron's Bluff, above Lawrence, Kan., in 1916. No other records are available for the state.

Lymnæa humilis rustica Lea. One specimen. This form is recorded from Douglas county, Kansas, by Baker (*Lymnæidæ of N. Am., p. 269, 1911*), and is probably the same as was recorded from the Phillips county Pleistocene as *L. humilis.*

Lymnæa parva Lea. Thirteen specimens. Previously known from the marl beds of Long Island, Phillips county, and from Douglas county river debris.

Planorbis antrosus Conrad. Seven specimens.

Planorbis deflectus Say. Two specimens. Both are small and apparently not full grown. The species lives in Lake View,

Douglas county and has been found in the Pleistocene of Phillips county. Baker (*Naut., XXIII, p. 93, 1909*) records it from Anthony, Kan.

Succinea avara Say. Abundant.

Succinea stretchiana Bland. Two specimens. This species lives on the plains at the present time and the two shells secured are plainly not fossils.

Vallonia pulchella Müller. Fifteen specimens. This is an addition to the list of Kansas Mollusca and since it inhabits cool, moist timbered areas it emphasizes that this was the condition in western Kansas in Pleistocene time.

Zonitoides singleyanus Pilsbry. Two specimens, not fossils.

Pupilla muscorum Linnæus. Abundant. In Pleistocene time this was a very common snail in western Kansas.

Pupoides marginatus Say. Six living shells.

Gastrocopta armifera Say. One living shell. Both this and the preceding species live in the region at the present time.